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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/782,780 | 02/13/2001 | Gregory Bollella | RSW920000109US1 | 2022 |
| 25259 | 7590 | 07/08/2004 | EXAMINER | |
| IBM CORPORATION 3039 CORNWALLIS RD. DEPT. T81 / B503, PO BOX 12195 RESEARCH TRIANGLE PARK, NC 27709 | | | VO, LILIAN | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 2127 | |

DATE MAILED: 07/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/782,780

Applicant(s)

BOLLELLA ET AL.

Examiner

Lilian Vo

Art Unit

2127

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 03 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 February 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>2</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1 – 20 are pending.

Information Disclosure Statement

2. The Office acknowledges receipt of the information disclosure statement (IDS) filed on 2/13/01, Office Paper No. 2. Accordingly, the examiner has considered the references listed on PTO-1449.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 13 and 20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

5. **Claim 13** recites the limitations "the means for using" and "the upper limit", in lines 1 and 4 respectively, page 22. There is insufficient antecedent basis for this limitation in the claim.

6. **Claim 20** recites the limitations "the using step", "the steps" and "the upper limit", in lines 1 and 4 respectively, page 23. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1, 7 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by applicants' admitted prior art.

9. Regarding **claim 14**, Applicants' admitted prior art discloses a method for improving scheduling of tasks, comprising steps of:

computing whether execution of a plurality of tasks is feasible, wherein each of the tasks has an associated cost and an associated deadline (specification page 2, lines 1 – 18);

adding an additional amount of time to the associated cost for each of the tasks, thereby yielding a revised cost for each task, when the execution is computed to be feasible (specification page 3, lines 11 – 14, page 4, lines 5 - 6); and

iteratively repeating operation of the computing step and the adding step, until the execution is computed to be no longer feasible (specification page 2, lines 13 – 18).

10. **Claims 1 and 7** are rejected on the same ground as stated above.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1 - 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Balasubramanian (US 6,687,257).

13. Regarding **claim 14**, Balasubramanian discloses a method for improving scheduling of tasks (abstract, col. 4, lines 35 – 39), comprising steps of:

computing whether execution of a plurality of tasks is feasible, wherein each of the tasks has an associated cost and an associated deadline (abstract, col. 10, lines 55 – 61, col. 11, lines 10 – 36, fig 9);

adding an additional amount of time to the associated cost for each of the tasks, thereby yielding a revised cost for each task, when the execution is computed to be feasible (abstract, col. 13, lines 11 – 31, col. 14, lines 1 – 29, fig 11: see rational reason below); and

iteratively repeating operation of the computing step and the adding step, until the execution is computed to be no longer feasible (col. 11, lines 37 – 40, figs. 8a, 8b, 9 and 11).

Balasubramanian discloses of interrupt management, in which interrupt would take a high priority level and interrupt the current task to execute (col. 12, line 63 – col. 13, line 30, line 50 – col. 14, line 13 and fig. 11). It would have been obvious for one of an ordinary skill in the art, at the time the invention was made, to recognize that a revised cost for each task including the additional time is being considered and implemented in Balasubramanian's system in which time occur from interrupt event during the current task execution can be handled without affecting guarantees for task execution (col. 14, line 20 – 29).

14. Regarding **claim 15**, Balasubramanian discloses the method according to claim 14, further comprising the step of using the revised cost for each task as an upper limit on execution time for the task, after operation of the step of iteratively repeating (col. 14, lines 21 – 29: guarantees for task execution when interrupt occur within the interrupt window).

15. Regarding **claim 16**, Balasubramanian discloses the method according to claim 14, wherein the additional amount of time is a fixed percentage of the associated cost for the task (col. 13, lines 51 – 67: the number is interrupts expected and how long interrupts take to be serviced).

16. Regarding **claim 17**, Balasubramanian discloses the method according to claim 14, wherein the additional amount of time is zero for a subset of the tasks, and for all other tasks is a fixed percentage of the associated cost for the task (col. 13, lines 19 – 30: in some cases, interrupt events may preempt the current task -- incur additional time to the current task cost; or might wait its turn -- zero additional time to the current task).

17. Regarding **claim 18**, Balasubramanian discloses the limitation in which in one iteration the additional amount of time is a fixed percentage of the associated cost for the task and on other iterations, the additional amount time is a fixed percentage of the revised cost the task (col. 13, line 19 – 30, 51 – 67, col. 14, lines 21 – 29). It is considered well-known in the art as shown in applicants' admitted prior and Balasubramanian that associated cost for each task is the same on every iteration except when unscheduled task such as interrupt event occur, which is unpredictable and could be during the first iteration. Therefore, a fixed percentage of additional time of the associated cost for the task could also be equivalent to the fixed percentage of additional time of the revised cost for the task since revised cost means interrupt task has occurred.

18. Regarding **claim 20**, Balasubramanian discloses the method according to claim 14, further comprises steps of:

determining, at run-time, whether a particular one of the tasks has exceeded its associated cost, and if so, allowing the particular task to run until reaching a minimum of (1) an amount of time remaining until the task's associated deadline or (2) the upper limit on execution time for the task (col. 14, lines 1 – 29: process the interrupt (the particular task) within the interrupt window)

19. **Claims 1 – 13 and 19** are rejected on the same ground as stated above.

Conclusion

20. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lilian Vo whose telephone number is 703-305-7864. The examiner can normally be reached on Monday - Thursday, 7:30am - 5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 703-305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lilian Vo
Examiner
Art Unit 2127

lv
June 18, 2004


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